

RURAL–URBAN DIFFERENCES IN SUBJECTIVE WELL-BEING FOR SOUTH AFRICA: STATIC AND DYNAMIC APPROACHES

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While there is a well-documented positive relationship between income and life satisfaction, little research (if any) has examined this relationship for samples split by location (rural and urban areas) in South Africa. Using panel data from five waves of National Income Dynamics Study (NIDS) we track the subjective well-being of rural and urban households and estimate static and dynamic models of life satisfaction, which incorporate a range of independent variables (lagged subjective well-being, relative income and other control variables), and dependent variable (life satisfaction). Our findings reveal that, despite considerable differences between urban and rural households in terms of income, rural households report experiencing greater subjective well-being than urban households do. Furthermore, our results suggest that not only does own-income have a positive effect, comparison-income or relative income also positively affect SWB.

Keywords: NIDS, Utility, Income, Emotional Health, Static Model

JEL Classification: D6, D3

1. INTRODUCTION

It has become apparent from several decades of research that absolute (or own) income matters for subjective well-being or happiness of the individual. Surprisingly, the literature also points to an even larger effect of relative incomes on subjective well-being. That own income positively correlates with life satisfaction is no coincidence: a large paycheck can afford one the niceties (material possessions) of life, thus, raising one's living standard and happiness. Studies have shown that wealthier countries have a higher than average level of subjective well-being compared with poorer countries (Diener et al., 2013; Diener and Biswas-Diener, 2002; Dolan et al.,

2008; Ferrer-i-Carbonell, 2005; Powdthavee, 2010). Less obvious, however, is the reason why relative incomes (or incomes of others) would impact an individual's well-being. Many past studies report only a small positive effect of own income but a large negative effect of relative income on subjective well-being. This implies that although larger incomes make for better-off individuals, raising the incomes of all does not necessarily increase the happiness of all (Easterlin, 1995). This is principally because a general rise in incomes of all overtime will lead to rising material standards (norms) of the society (Easterlin, 1995). Some individuals would tend to feel relatively unhappy or see their happiness level stagnate even as their incomes increase, simply because they are comparing their income against a rising standard. This implies that relative income, or how the individual's income compares to the incomes of others, may be a far more significant determinant of happiness than the absolute amount of own income.

Unsurprisingly, the focus of subjective well-being research in recent times has shifted from the effect of own or absolute incomes to the effect of relative incomes in shaping life satisfaction. In what has become known as the relative income hypothesis, emphasis is placed on how the incomes of some reference group affect an individual's happiness. There is a burgeoning literature on the relative income hypothesis, and what the literature has made clear is that relative incomes either negatively or positively affects the individual's subjective well-being based upon whether the relative income of the reference group is perceived to be good or bad for the individual. Until about the last decade or two, most of the studies on subjective well-being and the relative income hypothesis were concentrated in developed countries. Data limitations in developing countries, particularly in Africa, limited such studies. In South Africa, for example, studies of life satisfaction or subjective well-being dates back only to the 2000s (Bookwalter and Dalenberg, 2006, 2009; Kingdon and Knight, 2006, 2007; Powdthavee, 2007). Facing such significant data limitations, these earlier studies were confined to assessing household-level, rather than individual-level subjective well-being. As pointed out by Posel and Casale (2011) such studies are valid only under the assumption that individual subjective well-being can be aggregated into a composite household subjective well-being, a very strong assumption that would be difficult to justify, theoretically or empirically.

In 2008, the National Income Dynamics Study (NIDS), a comprehensive longitudinal household survey began in South Africa. This dataset has provided more information than was previously available to earlier researchers of subjective well-being in South Africa, allowing a more complete and detailed analysis of the determinants of subjective well-being. The first researchers to use this database is Posel and Casale (2011), who used the first wave of the NIDS to investigate the impact of relative income and perceptions of individual's ranking in the society on SWB. Posel and Casale (2001) argue that the use of objective measures of relative standing - such as mean incomes of reference groups - to determine individual's relative standing may be flawed as it assumes that the individual knows for certain what the incomes of the reference groups

are. Thus, to overcome this shortcoming they defined a subjective measure of relative standing based on the individual's perceived ranking in the income distribution. Comparing the effects of objective and subjective measures of relative rank, they find that the individual's perceived (subjective) ranking has a significantly larger effect on SWB than objective measures.

This article contributes to the literature in two significant ways. First, the literature thus far investigates relative income as a determinant of subjective well-being in South Africa but in a general, or nationwide context, and sometimes attempts have been made at racial, gender, or socioeconomic comparisons, but none have investigated the rural-urban divide in subjective well-being. The point of departure of this paper from these prior South African studies is that we focus on rural-urban differences in subjective well-being and investigate how important relative income is to differences in life satisfaction between rural and urban dwellers.

The second contribution of the paper is that we use a much more comprehensive, longitudinal dataset consisting of 5 waves of the NIDS survey covering all regions of South Africa. The large panel data gives us the ability to test the effect of own and relative incomes in a static as well as dynamic specification. No studies to date have tested the dynamic effects of relative incomes on SWB. Most studies, at least in the South African context, have used only cross-sectional data, meaning that their estimates are based on static models. We show in this paper that the static estimates may be biased, thus understating/overstating the SWB effects of relative incomes. We overcome this flaw by formulating and estimating the dynamic model.

The main findings of the paper are that own income positively affects well-being, both in the full sample as well as in the sub-samples (rural versus urban), consistent with earlier findings. We also show that individuals' perceptions of where they rank in society (village/suburb) - relative income - affects subjective well-being positively. If an individual perceives their relative standing to be higher in the village or suburb, they tend to report higher levels of happiness than their peers. For those whose perceived ranks are lower, they report lower life satisfaction. The effect of perceived rank (relative income) is strongly correlated with SWB than own income as other researchers have found. The difference, however, is that whereas most prior studies found a negative correlation between perceived rank (relative income) and SWB, our results show a positive effect. Thus, we find evidence that relative income has a larger positive effect on SWB than actual (own) income. The rural-urban difference in SWB effect of relative incomes is that people whose perceived rank is higher in the rural sample tend to have a higher SWB, compared with a similarly perceived rank in the urban sample.

The paper proceeds as follows. Section 2 provides the literature review; Section 3 describes the data and methodology; Section 4 presents the results; Finally, Section 5 concludes the analysis.

2. METHODOLOGY AND DATA

In this paper we follow the protocol in the literature and use Subjective Well-Being interchangeably with life-satisfaction and happiness. The study of subjective well-being, life satisfaction, or happiness is not new. Indeed, studies of the correlates of subjective well-being dates back several decades, starting first in the social sciences: earlier studies in psychology and sociology had linked happiness with relative economic position of the individual (Diener, 1984; Veenhoven, 1993). Initially, economists tended to be dismissive of the notion of subjective well-being as a measurable economic concept, preferring instead to focus on utility. While the concept of utility posits that an individual's income positively affects their utility, relative income has not been expressly stated as an argument in utility functions, and many economists tended to deny or belittle the importance of relative income in utility functions. Economists have since found links between relative incomes and subjective well-being (Clark et al., 2008; Lou, 2009; Asadullah et al., 2018; Wang et al., 2019).

2.1. Income and Subjective Well-Being

The relationship of income and happiness was first brought to light by Easterlin (1974, 1995) in what has become known as the Easterlin paradox or happiness-income paradox. To paraphrase Easterlin, the paradox arises from the fact that, within a country at a given time the people with higher incomes are on average, happier than those with lower incomes, but then as incomes rise over time, happiness stays relatively constant. This paradox was initially thought to be a developed-world phenomenon as the earliest studies that found this relationship were concentrated in developed countries. Easterlin (1974) uncovered this paradox using data on the United States, but similar results were later found for Japan and nine European countries (Easterlin, 1995). In recent times the happiness-income paradox has been observed in a broad swath of countries, both developed and developing. Easterlin et al. (2010) find that the paradox holds in a group of 17 Latin American countries, 17 developed countries, 11 Eastern European countries, and 9 developing countries across Africa, Asia, and Latin America.

Two reasons have been proposed to explain why the happiness-income paradox holds (Easterlin, 2003; Clark et al., 2008). The first is the theory of social comparisons, which states that rising social norms causes the individual's SWB to remain constant or even decrease over time. Within a society, as incomes increase, material norms (standards) on which subjective well-being is based tends to increase, such that even though people may be getting richer, they may feel relatively poorer in comparison to the society's norms and thus their subjective well-being may not improve. Thus, comparison to others (the relative income effect) produces a diminishing effect on the individual's well-being. The second reason is the adaptation theory or habituation (known in psychology as hedonic adaptation) which posits that individuals tend to adapt to their incomes over time. As an individual's income increases, their happiness level

may temporarily rise, but then as they get used to living this new life, their happiness goes back down to what it was before the increase in income. Put differently, an increase in income has a transient effect on SWB. Easterlin (2003) distinguishes two types of adaptation: complete versus incomplete adaptation. If people's desire for material goods increases by the same proportion as their increase in incomes, then they exhibit complete adaptation to their new incomes, result of which is a no rise in SWB, but if there is a less than proportionate increase in material desires as incomes increase, then SWB might conceivably rise.

2.2. The Role of Relative Income on Subjective Well-Being

It's been well documented that an individual's income has a positive, albeit, small effect on his/her subjective well-being (Diener and Biswas-Diener, 2002; Frey and Stutzer, 2002; Kahneman and Krueger, 2006). It is not exactly clear, though, what the nature of the effect of relative income on SWB truly is. Does relative income have a positive or negative effect on subjective well-being? Although more researchers find an inverse relationship between subjective well-being and relative income (Luttmer, 2005; Ferrer-i-Carbonell, 2005; McBride, 2001), there are a few that have reported a positive or mixed relationship (Senik, 2004; Kingdon and Knight, 2007). The question that arises is why relative income should have a positive effect in some cases and a negative effect in others? The answer, it turns out, depends on the reference group (Kingdon and Knight, 2007). Should the reference group be defined based on geographical proximity to one's neighbors, or should it be based on demographic factors like employment status, education, race, incomes, or even age? This issue is adequately addressed in Kingdon and Knight (2007), and Bookwalter and Dalenberg (2010).

Globally, many studies have estimated both the effects of own income and relative income. The consensus that seems to emerge from the extant literature is that relative income matters more than absolute income as a determinant of the individual's subjective well-being. One of the global studies of the effect of relative income on SWB is McBride (2001) who examines the relationship between individual's own income and past financial standing using parental standard of living, and reference income to predict subjective well-being. McBride finds that relative income is important for SWB and that the effect may be smaller at low-income levels. Own income had a positive effect while relative-income or reference group income had a negative effect on SWB based on United States data.

Ferrer-i-Carbonell (2005) investigates the effects of own-income and relative-income effects on SWB in a large panel data in Germany. The results show that the "comparison-income" or income of the reference group is about as important as the individual's own income. Specifically, he found that individuals are happier the larger their income is compared to the reference group. Mentzakis and Moro (2009) report findings consistent with the Easterlin paradox for UK, based on eight waves of the British Household Panel Survey. They find that higher absolute incomes increase SWB

up to a point, while low absolute incomes are consistent with low SWB.

2.3. Subjective Well-Being and Relative Income in South Africa

Much of the studies on relative income hypothesis or happiness-income paradox has generally been conducted in developed countries, with relatively few in developing countries. But in recent years, with more developing countries able to conduct annual or biennial surveys of life satisfaction, the literature on happiness-income relationship outside of the developed world has picked up momentum. That said, there is still a scarcity of literature on subjective well-being in Africa as a whole, although South Africa has seen a flurry of studies over the last two decades or so. Subjective well-being studies in apartheid South Africa was scarce principally due to lack of good survey data. Beginning in the 1980s, several sociological studies of life satisfaction began to emerge with the onset of the South African Quality of Life Trends surveys conducted by scholars such as Møller and Schlemmer (1989) and Møller (1989, 1998, 2013).

Following these earlier studies, the availability of data provided by household surveys, which commenced post-apartheid, afforded other researchers the ability to conduct further studies of the relationship. The earliest of such studies based on household surveys are Møller (2007), Kingdon and Knight (2007), and Bookwalter and Dalenberg (2010). Using data from the General Household Survey, Møller (2007) investigated what matters for life satisfaction of South Africans, particularly black South Africans. The analysis indicated that the life satisfaction of black South Africans hinges to a great extent on the things that affect living standards such as incomes and access to material goods that make for a happy living standard. Other factors like housing quality, water supply, and telecommunication services were also critical to life satisfaction.

Another earlier study using data from the South African labour and Development Research Unit (SALDRU) of 1993 is Kingdon and Knight (2007) who investigate the determinants of subjective well-being, focusing principally on relative incomes and other relative variables like unemployment and education. The contribution of Kingdon and Knight to the literature is significant in the South African contest, because they look at the importance of relative income, defined based on different reference groups, like close neighbors and distant neighbors. They found differential impacts of “cluster neighbors”- who live in close proximity - versus “district neighbors” who are far removed from the immediate vicinity of the household. The relative incomes of “cluster neighbors” positively affects subjective well-being, but the relative incomes of distant neighbors (district neighbors) had a negative impact on SWB.

Other South African studies of the effect of relative income on SWB have been conducted based on prior household surveys (Hinks and Gruen, 2007; Powdthavee, 2007; Bookwalter and Dalenberg, 2010). Most of these studies were mostly cross-sectional data and might ignore the dynamics of the effect of relative incomes on SWB. Moreover, most of the previous SWB studies in South Africa analyzed racial differences in SWB between blacks and whites (Powdthavee, 2007; Bookwalter and Dalenberg, 2010; Posel

and Casale, 2011). This current paper is different from all these prior studies in that we focus on the effects of relative income for rural and urban South Africans. Additionally, with data from five waves of the NIDS, our paper is the most broad-based in assessing the dynamics of SWB.

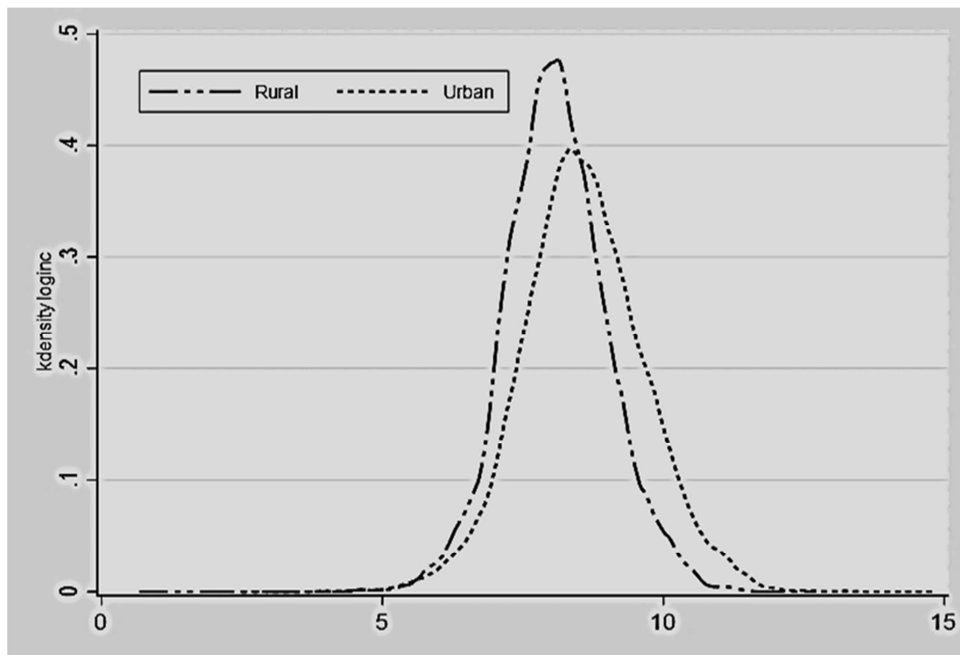
Recent studies have revealed a rural-urban divide in subjective well-being in which rural residents report significantly higher SWB than urban residents. For example, Hoogerbrugge and Burger (2021) examine the rural-urban difference in life satisfaction in the United Kingdom and finds that urban dwellers have lower SWB compared with rural residents. Similar findings have been reported in other western countries, including the United States, Canada, and Netherlands (Winters and Li, 2017; Berry and Okulicz-Kozaryn, 2011; Lu et al., 2015; Burger, 2021). This phenomenon is not limited to western countries, as recent evidence has also shown the same to be true in China and Hong Kong (Schwanen and Wang, 2014; Chen et al., 2015; Clark et al., 2019; Dang et al., 2020). Investigating this rural-urban SWB gradient in a sample of 29 countries, Requena (2016) found that for wealthier countries (defined as GDP per capita greater than US\$20,000) residents of the countryside have higher SWB than urbanites, but the reverse was true for less developed countries (GDP per capita less than US\$20,000). The author attributes lower rural SWB in poorer countries to difficult rural living conditions, such as poor infrastructure and minimal standards of living, while big cities have the things that make life more comfortable. Burger et al. (2020) support this finding for Sub-Saharan Africa, where urban dwellers are generally happier than rural residents because of better economic conditions in the cities.

3. EMPIRICAL RESULTS AND DISCUSSION

3.1. Dataset

We employ longitudinal data for the period 2008 to 2017 obtained from the first nationally representative survey, the National Income Dynamics Study (NIDS) in South Africa. The survey data has been collected every two years since 2008 by the Southern Africa Labour and Development Research Unit (SALDRU) based at the University of Cape Town's School of Economics. The study began in 2008 with a nationally representative sample of over 28,000 individuals in 7,300 households across the country. The same individuals have been followed (re-interviewed) in the subsequent waves. The NIDS collects rich information on poverty and well-being, household composition and structure, fertility and mortality, migration, labour market participation, and economic activity, human capital formation, health, education, vulnerability and social capital. The NIDS data is the best available data for answering the research questions. It allows SWB of individuals to be tracked over time, partially alleviates at least some endogeneity concerns, and permits comparison of each individual's SWB only to their own preceding assessment.

The dependent variable is SWB which is derived from the respondent's response to the question: "Using a scale of 1 to 10 where 1 means "very dissatisfied" and 10 means "very satisfied", how do you feel about your life as a whole right now?" this particular measure of SWB has been widely used in previous studies, (see Kingdon and Knight, 2006; Posel and Casale, 2011). The NIDS data encompasses a wide range of information: individual demographic characteristics (such as culture, education, employment, gender, age, marital status and health status); household features (such as household size, location of the household, household's access to services); social capital measures (such as whether the household is affiliated to religious activities, crime and trust). Our variable of interest is relative standing: measured by income (actual incomes received and perceived relative income standing). Unlike previous studies in South Africa, we also control for the reinforcement effects of past SWB, lagged SWB variable is included. Following Posel and Casale (2011) we restrict our sample to individuals aged 17 years and older.



Note: income is log-transformed to achieve a more normal distribution. This makes it easy to compare the means and variances of rural and urban sub-samples.

Figure 1. Household Income by Location (Rural and Urban), 2008-2017

Figure 1 sheds some light on differences in the standard of living of rural and urban households. Specifically, it shows the kernel density distribution of incomes (in

log-scale) for households residing in rural areas and urban areas. In line with the consensus in happiness literature, we observe that urban households are better off than their rural counterparts are - the mean of the income distribution of urban areas is located to the right side of the mean of rural areas. Moreover, the distribution of urban households is widely dispersed than the rural households. To establish whether urban-rural income disparities is reflected in the subjective wellbeing of these households we look at the distribution of SWB by location. Figure 2 displays the spatial differences in subjective wellbeing for rural and urban households. As can be seen in the figure there is no noticeable difference between the two areas - the mean values of life satisfaction by location are very similar (in the region of about 5 for both rural and urban households). The results based on alternative measures of SWB (Such as individual's emotional state during the week prior to the survey: whether the individual reported being depressed or lonely) follow a similar pattern - see the appendix.

Table 1 and Table 2 display transition matrices of subjective well-being (ranging from 0 to 10) for the rural areas and the urban areas. It shows that for the period 2008 to 2017 values below the diagonal were substantially higher than the values above the diagonal, implying that a move from highest to lowest SWB levels was more likely to happen - the percentage of people in the sample were more likely to move down one or more SWB categories during this period. Whereas in the urban areas, the percentage of the people who climbed up one or more SWB levels was relatively higher compared to the percentage of people who descended the SWB ladder during this period: 2008 to 2017.

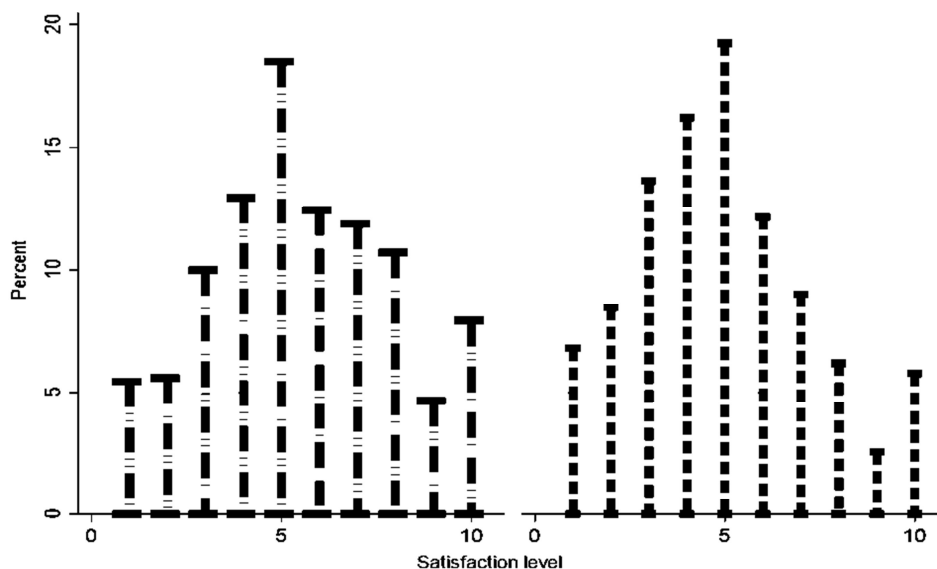


Figure 2. Satisfaction Level for Urban (Left) and Rural Households (Right)

Table 1. Subjective Well-being Transition Dynamics in Rural Areas, (Percentage)

		1	2	3	4	5	6	7	8	9	10	Total
		Wave 5 [2017]										
Wave 1 [2008]	1	4.35	10.87	17.39	18.84	15.94	11.96	7.25	6.88	2.17	4.35	100
	2	5.29	9.62	18.27	12.02	22.12	11.54	8.65	5.77	1.92	4.81	100
	3	5.24	3.99	15.21	19.45	18.20	12.72	8.73	6.98	2.49	6.98	100
	4	3.69	7.38	15.34	17.28	20.19	12.62	8.74	6.21	2.14	6.41	100
	5	3.36	4.42	13.1	15.75	22.30	13.81	9.730	9.73	2.65	5.13	100
	6	3.94	7.64	11.82	13.05	18.97	16.26	12.07	9.11	1.97	5.17	100
	7	3.85	5.24	13.99	12.94	19.93	13.99	7.34	9.79	3.85	9.09	100
	8	3.37	4.49	8.43	14.04	20.22	17.98	11.80	9.55	3.93	6.18	100
	9	3.03	0.00	12.12	6.06	21.21	10.61	12.12	13.64	13.64	7.58	100
	10	2.70	2.7	10.27	17.84	23.24	10.81	10.81	10.81	4.32	6.49	100
		3.95	6.09	13.93	15.72	20.09	13.48	9.46	8.33	2.88	6.06	100

Source: Authors estimations based on NIDS data (Wave 1 and 5).

Table 2. Subjective Well-being Transition Dynamics in Urban Areas, (Percentage)

		1	2	3	4	5	6	7	8	9	10	Total
		Wave 5 [2017]										
Wave 1 [2008]	1	5.17	5.6	15.52	13.79	20.69	13.79	10.34	9.91	3.45	1.72	100
	2	8.09	8.09	15.44	15.44	15.44	11.03	7.350	12.50	3.68	2.94	100
	3	5.24	7.62	10.00	17.14	18.1	10.00	11.90	11.90	2.86	5.24	100
	4	3.81	5.38	10.76	15.92	19.28	10.99	12.78	10.09	4.26	6.73	100
	5	3.61	2.88	8.530	10.46	21.39	14.30	13.58	12.5	4.93	7.81	100
	6	2.98	5.21	8.010	11.92	18.99	12.66	14.15	12.48	6.33	7.26	100
	7	3.00	4.13	9.570	11.82	18.2	11.07	14.82	14.07	5.44	7.88	100
	8	2.78	4.06	5.980	12.39	15.38	12.61	14.96	14.32	6.62	10.9	100
	9	2.21	1.66	5.520	8.29	14.36	16.57	16.57	16.57	8.84	9.39	100
	10	2.81	1.94	6.480	12.74	19.87	13.17	13.39	13.17	6.26	10.15	100
		3.54	4.19	8.89	12.53	18.82	12.7	13.52	12.73	5.4	7.68	100

Source: Authors estimations based on NIDS data (Wave 1 and 5).

Table 3 and Table 4 display the quintile transition matrices of income classes of the households in rural and urban areas. The rows signify the income quintiles of the households in wave 1, while columns show the income quintiles of households in the wave 5. The estimated transition matrix of household income in rural areas is presented in Table 3. The two tables show the likelihood that a household in one income quintile will move up or down or remain in the same quintile after a fixed period of time. In this case we can identify upward mobility of households as a percentage of households that were in the lowest quintile but who attains the top quintile. Looking at the transition matrix of household income in rural areas first, we see that this value is located at the top-right corner of the transition matrix. Specifically, we observe that it corresponds to a probability of 0.75. Put it another way, 0.75 percent of households that were located in

the lowest quintile in 2008 managed to move up to the top quintile. On the other hand, nearly 24 percent of households that were in the lowest quintile in 2008 remained in the very same quintile in 2017. The percentage of families who moved downward instead, can be traced by identifying the percentage of those that were initially located in the top quintile but unfortunately ended up in the lowest quintile. In our case this value is at the down-left corner transition matrix - amounting to 4.13 percent.

Table 3. Transition Matrix of Household Income in Rural Areas, 2008 and 2017

Quantile: Poorest to richest		1	2	3	4	5	6	7	8	9	10	Total
		Wave 5 [2017]										
Wave 1 [2008]	Bottom quintile	23.63	14.6	14.88	10.55	12.99	6.12	6.87	3.95	5.65	0.75	100
	2	20.05	20.68	15.13	11.82	8.5	6.27	9.76	3.67	3.13	0.98	100
	3	16.13	16.41	13.95	13.86	12.49	10.57	7.02	2.83	4.74	2.01	100
	4	15.52	14.91	14.21	15.62	9.21	9.41	9.41	5.11	2.9	3.7	100
	5	11.33	13.84	12.1	10.45	13.36	13.55	11.13	7.55	4.94	1.74	100
	6	8.64	10.39	10.5	11.27	10.94	15.43	13.35	13.24	4.92	1.31	100
	7	6.06	10.34	10.11	10.82	14.03	12.72	10.23	15.81	4.4	5.47	100
	8	5.99	6.26	7.62	9.66	14.01	9.12	8.98	15.37	15.65	7.35	100
	9	4.15	10.58	6.22	10.17	4.56	13.69	6.02	14.32	15.98	14.32	100
	Top quintile	4.13	8.26	9.5	4.55	5.37	5.37	6.2	16.12	25.21	15.29	100
Total		13.24	13.58	12.17	11.56	11.22	10.31	9.22	8.43	6.59	3.68	100

Table 4. Transition Matrix of Household Income in Urban Areas, 2008 and 2017

Quantile: Poorest to richest		1	2	3	4	5	6	7	8	9	10	Total
		Wave 5 [2017]										
Wave 1 [2008]	Bottom quintile	21.4	15.55	13.55	11.2	9.36	9.53	6.19	6.52	5.85	0.84	100
	2	11.64	13.61	9.27	14.6	10.65	7.3	11.24	9.66	9.66	2.37	100
	3	13.79	14.16	15.06	8.71	15.25	11.43	7.26	8.53	2.54	3.27	100
	4	10.02	10.5	12.6	11.47	8.24	13.41	12.44	10.5	9.05	1.78	100
	5	8.51	9.47	14.61	13.96	13.48	11.24	10.75	9.79	6.26	1.93	100
	6	9.21	7.99	9.35	13.01	8.27	9.89	15.45	15.18	9.76	1.9	100
	7	6.49	9.92	9.21	11.81	8.38	12.63	14.52	12.51	9.8	4.72	100
	8	5.63	3.98	6.41	8.16	9.81	12.14	13.98	17.48	16.21	6.21	100
	9	3.66	4.89	4.71	4.01	7.68	8.81	12.04	14.92	21.29	17.98	100
	Top quintile	1.78	1.26	1.36	1.47	5.14	3.04	5.56	10.38	22.85	47.17	100
Total		8.12	8.09	8.67	9.02	9.18	9.79	11.17	12.2	12.83	10.93	100

There are some commonalities and slight differences between overall mobility of the rural households located in the lowest quintile (see row one of Table 3) and that of the urban households in the same quintile (see row one of Table 4). While about 24 percent of rural households in the lowest quintile in 2008 remained in the very same quintile in 2017, slightly fewer urban households (in the region of 21%) remained in the lowest quintile in the subsequent period. Some slight differences can be observed regarding the proportions of households who moved into the lowest quintile between the two areas, again with the urban households recording slightly less drop compared to their rural counterparts. For instance, while on average about 21% of rural households located in the second lowest quintile moved into the lowest quintile, only about 12% of the urban households (located in the same quintile) experienced a move into that lowest quintile. Similarly, we observe a similar pattern emerging regarding the movement into the second-largest income quintile.

Although income mobility appears to be different between rural and urban areas, it is not reflected in the SWB of these areas. For example, while in the urban areas, the percent of the people who moved up one or more SWB levels was relatively higher compared to the percentage of people who descended the SWB ladder for the period 2008 to 2017, the overall percentage of the households who moved down exceed that of those who moved up the income quintiles, suggesting that income might not be an important determinant SWB in these areas - there are other important factors at work. Thus, we control for a number of covariates which (according to the existing literature) are important in explaining SWB and attempt to establish the whether the determinants of SWB differ by location.

3.2. Methodology

Empirically, the literature on the determinants of SWB has generally treated SWB as a contemporaneous issue, ignoring the potential persistent effect of the past SWB on current happiness. In other words, the shared feature of the existing studies in this field is a strong reliance on static models when estimating the determinants of SWB. While these studies have shared some useful insights regarding the factors that affect the SWB, there is evidence to suggest that static models are potentially miss-specified - serial correlation (omitted dynamics) is not tested for. In their paper Roth (2013), shows that models that do not consider the dynamic nature of SWB might result in biased results. Roth (2013:11), takes the view that “There is an unspecific persistence effect that makes people with currently high SWB likely to exhibit high SWB tomorrow.” Biyase et al. (2021) also reach similar conclusion in their paper where they found that the coefficient on lagged SWB (derived from the dynamic model) was positive and statistically significant, confirming that SWB today is significantly influenced by SWB in the past. Yet, recent studies suggest it exist and regard it as a serious empirical concern. We approach the empirical analysis in a two-step fashion. The first part takes in a basic specification (unlagged model), the model is specified as follows:

$$S_{it} = \beta X_{it} + \varphi_i + \delta_t + \mu_{it}, \quad (1)$$

where S is the satisfaction level reported by individual i , at time t ; X is a vector of explanatory variables φ is individual specific effect, δ is time effect, and μ is the error term. Given the finding derived from recent studies that SWB in previous period is also a significant determinant of SWB in the current period, it is more appropriate to specify the regression in a dynamic panel framework as below.

$$S_{it} = \beta_1 X_{it} + \beta_2 S_{it-1} + \varphi_i + \delta_t + \mu_{it}. \quad (2)$$

Equation 2 is a first-order dynamic panel model, because the explanatory variables on the right-hand side include the first lag of the dependent variable (S_{it-1}). Given the latency and the longitudinal nature of our data the recommended estimation method is an ordered probit model with individual random effects and Mundlak's corrections (Ferrer-i-Carbonell, 2005). However, there is sufficient evidence to suggest that even fixed effects estimation delivers qualitatively similar estimates (Ferrer-i-Carbonell and Frijters, 2004). For that reason, our paper will employ the fixed effects model. Part of the reason we chose fixed effect is because it not only accounts for the unobserved heterogeneity among cross-sectional units, but also allows for the possibility that explanatory variables are correlated with residuals. We postulate that an individual's SWB is influenced by the following factors:

$$S_{it} = \beta_0 + Y_{it} + \beta_1 X_{it} + \beta_2 S_{it-1} + \varphi_i + \delta_t + \mu_{it}. \quad (3)$$

where i and t denote the individual and the period, respectively; y is a representing income variables, X is a set of individual demographic characteristics (such as culture, education, employment, gender, age, marital status and health status); household features (such as household size, location of the household, household's access to services); social capital measures (such as whether the household is affiliated to religious activities, crime and trust).

4. EMPIRICAL RESULTS

4.1. Static Model Estimates

Table 5 displays the estimates of the static model of SWB for the different subsamples. Specifically, it presents the estimates derived from the full sample as well as separately for rural and urban sub-samples. Static models may suffer from omitted dynamics bias, causing bias in the estimated coefficients. Thus, the dynamic panel model is used. The estimates of the dynamic panel model are presented in Table 6.

Columns 2-4 of Table 5 show the results of the regression analyses conducted with the full sample. It yields estimates with expected signs and level of significance for both per capita household income and perceived relative income. Household income is positively associated with life satisfaction, consistent with the work of Knight and Gunatilaka (2010) who find that regardless of the specification used, income per capita always enters positively and significantly (although the effect becomes less strong with the introduction of other variables). Although other scholars (Blanchflower and Oswald, 2004; Clark and Oswald 1994; Ferrer-i-Carbonell, 2005; Powdthavee, 2010) reach similar conclusions, this finding and its theoretical underpinnings is not universal - is still a matter of debate (Christoph, 2010).

Interestingly, individuals' perceptions of where they rank in their village/suburb (how the geographical proximity of the individual's external reference group affects subjective well-being) suggest that individuals whose relative standing is perceived to be higher in the village or suburb, tend to be happier than their counterparts. The estimated coefficients of other perceived relative income (inwardly-oriented comparisons) appears to be strongly and significantly related to life satisfaction. This result supports the findings of previous studies (Posel and Casale, 2011), which find evidence to suggest that perceived relative income "has a far greater effect on subjective well-being than actual relative income". What seems to emerge from this discussion is that individuals not only get satisfaction from their own income but also the degree to which their income relates with the income of their reference group (Pereira and Coelho, 2013).

The other standard determinants of life satisfaction yield expected signs and confirm our expectations. Consistent with existing findings (Pereira and Coelho, 2013), we observe a 'U-shaped relationship between age and life satisfaction' - respondents are more likely to report higher life satisfaction in their earlier and later periods of their lives, than midlife period. Unsurprisingly, being unmarried ("Widower/Divorced/Never Married") is negatively associated with life satisfaction. This finding may be reasonably explained by the fact that marriage tends to protect against loneliness and isolation, which are factors that negatively affect happiness.

As expected, self-assessed health status of respondents was found to be positively associated with life satisfaction - respondents who rate their health status as excellent have a higher life satisfaction than those who rate their health status as poor. The results also reveal that race dummies are important in explaining life satisfaction. In comparison with Black population group, Whites, Indians and Coloured population groups are more likely to report being happy. Unlike previous studies our paper also controls cultural dummies (proxied by language spoken by the respondents). In comparison with English language, individuals who speak IsiNdebele, IsiXhosa, IsiZulu, Sepedi, Sesotho, Setswana, SiSwati, Tshivenda and IsiTsonga are less likely to report being happy. This may be attributed to the fact that English and Afrikaans-speaking white South Africans used to enjoy highest social prestige before the changeover in power, although this has diminished somewhat since the end of apartheid. We also find expected signs of social capital variables in relation to life satisfactions - in comparison to individuals who are

not affiliated with religion, those who are affiliated with certain religions (such as Christian, Jewish, Muslim, Hindu, African traditional spiritual beliefs) are generally more satisfied with their life.

We reproduce the analysis of the same empirical model utilized in the full sample using sub-samples divided by location - rural and urban to find out if the influence of the explanatory variables is consistent or varies by area in question. Columns 5-10 of Table 5 show the results of rural and urban locations. Reporting health as poor, good and fair, being widowed, divorced, or never married, were statistically significant in both rural and urban samples, and were associated with lower levels of life satisfaction. Likewise, in comparison with individuals who speak English language, individuals who speak IsiXhosa, IsiZulu, SiSwati, Tshivenda and IsiTsonga were statistically significant in both rural and urban samples and were associated with lower levels of life satisfaction. However, being a Ndebele, Pedi and Sotho language speaker, is associated with lower levels of life satisfaction, but the relationship is not significant in the rural sample. Individuals whose relative standing is perceived to be higher in the village or suburb, and other perceived relative income (inwardly oriented comparisons) were mostly statistically significant in both rural and urban samples and were associated with higher levels of life satisfaction.

Following Bottana and Trugliab (2011), Pudney (2008), Newman and Delaney (2008) we account for dynamics in life satisfaction using individual-level panel data from the national income dynamics study – incorporating a lagged dependent variable of well-being. While the dynamic model yielded slightly different findings in some limited cases, the key findings derived from the static model remained largely unchanged. Specifically, it was continually found that rural households report experiencing greater subjective well-being than urban households do. The results for individual variables (marital status, age, agesq, health status, gender, employment), household variables, social capital variables (such as religious affiliation) and income variables (derived from objective and subjective measures) are also mostly similar to the static model.

The noticeable difference between the static model estimates and dynamic estimates relate to the estimated coefficient of the lagged dependent variable (life satisfaction), which sheds some light concerning the dynamics of life satisfaction - the degree to which the past history might influence the model. Across sub-samples, the coefficient of the lagged life satisfaction is positive and significant and in the region of about 0.3, implying that the entire history of life satisfaction has some impact (0.3388) on current life satisfaction. These results are consistent with the work of Bottana and Trugliab (2011), who found that the coefficient on lagged happiness is positive and statistically significant.

Table 5. Fixed Effect Estimates of the Determinants of SWB in South Africa:
Static Model

	Full sample			Rural sample			Urban sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Rural	0.1464	0.0267	***						
Individual variables									
age	-0.0350	0.0031	***	-0.0272	0.0041	***	-0.0493	0.0049	***
age2	0.0004	0.0000	***	0.0003	0.0000	***	0.0006	0.0001	***
Education	0.0011	0.0015		-0.0037	0.0019	*	0.0092	0.0024	***
African	-0.7662	0.0928	***	-0.8084	0.2606	***	-0.6902	0.0998	***
Coloured	-0.3789	0.0544	***	-0.3595	0.1655	*	-0.2967	0.0591	***
Asian/Indian	-0.1058	0.1395		-0.6682	0.3360	*	0.0851	0.1584	
culture(language)									
<i>IsiNdebele</i>	-0.6891	0.1242	***	-0.5324	0.3661		-0.8044	0.1456	***
<i>IsiXhosa</i>	-0.6074	0.0973	***	-0.7625	0.3459	*	-0.4373	0.1036	***
<i>IsiZulu</i>	-0.6496	0.0970	***	-0.6657	0.3456	*	-0.5811	0.1033	***
<i>Sepedi</i>	-0.4511	0.1002	***	-0.3945	0.3468		-0.5486	0.1137	***
<i>Sesotho</i>	-0.3519	0.1000	***	-0.2823	0.3537		-0.3154	0.1053	***
<i>Setswana</i>	-0.0424	0.0992		0.1207	0.3475		-0.1717	0.1066	
<i>SiSwati</i>	-0.7835	0.1135	***	-0.7425	0.3512	*	-0.8758	0.1724	***
<i>Tshivenda</i>	-0.6358	0.1222	***	-0.6641	0.3546	*	-0.5176	0.2071	*
<i>IsiTsonga</i>	-0.9113	0.1144	***	-0.9155	0.3530	**	-0.7782	0.1479	***
<i>Afrikaans</i>	0.2516	0.0649	***	0.1307	0.2839		0.2927	0.0663	***
Living with partner	-0.2752	0.0366	***	-0.2257	0.0547	***	-0.3005	0.0494	***
Widower	-0.2019	0.0358	***	-0.2323	0.0467	***	-0.1350	0.0557	*
Divorced	-0.1972	0.0580	***	-0.1907	0.0990	*	-0.2151	0.0718	***
Never Married	-0.2281	0.0259	***	-0.1692	0.0375	***	-0.2952	0.0360	***
Very Good	-0.1508	0.0230	***	-0.1643	0.0330	***	-0.1318	0.0320	***
Good	-0.2554	0.0241	***	-0.2780	0.0347	***	-0.2299	0.0334	***
Fair	-0.3877	0.0344	***	-0.3816	0.0486	***	-0.3869	0.0488	***
Poor	-0.5269	0.0516	***	-0.6258	0.0707	***	-0.4283	0.0754	***
Gender	0.0210	0.0188		0.0282	0.0271		0.0183	0.0262	
Employment	0.2361	0.0200	***	0.2148	0.0293	***	0.2588	0.0280	***
HH-size	0.0113	0.0027	***	0.0098	0.0034	***	0.0143	0.0047	3.04
Household variables									
Chemical toilet	-0.6598	0.0478	***	-0.6915	0.0645	***	-0.3271	0.0917	***
Pit latrine with ventilation pipe	-0.0832	0.0337	***	-0.0667	0.0503		-0.1872	0.0661	***
Pit latrine without ventilation pipe	-0.2473	0.0310	***	-0.2619	0.0478	***	-0.2350	0.0566	***
Bucket toilet	-0.2101	0.0531	***	-0.1853	0.0743	*	-0.2639	0.0849	***
None	-0.5338	0.0482	***	-0.4628	0.0640	***	-0.6631	0.0970	***
other	-0.0130	0.2121		-0.1568	0.2343		0.1924	0.3639	

Note: *, ** and *** defines significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 5. Fixed Effect Estimates of the Determinants of SWB in South Africa:
Static Model (con't)

	Full sample			Rural sample			Urban sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
<i>Social capital variables</i>									
Christian	0.2710	0.0325	***	0.2450	0.0425	***	0.2930	0.0506	***
Jewish	0.1895	0.1866		0.3527	0.2686		-0.0157	0.2636	
Muslim	0.4385	0.1363	***	0.1238	0.6064		0.4258	0.1433	***
Hindu	0.1399	0.1654		0.6045	0.2473	*	0.0230	0.2313	
African traditional spiritual beliefs	0.2053	0.0426	***	0.2135	0.0531	***	0.1526	0.0729	*
other	0.0883	0.1515		-0.0183	0.1956		0.2555	0.2349	
Crime	-0.0397	0.0181	*	0.0246	0.0260		-0.1048	0.0252	***
Trust	0.0105	0.0194		0.0209	0.0276		0.0058	0.0274	
<i>Income variables</i>									
Ln Per capita household income	0.0309	0.0026	***	0.0371	0.0038	***	0.0250	0.0035	***
Perceived to be the same as at age 15	0.1125	0.0210	***	0.0179	0.0310		0.1874	0.0285	***
Perceived to be better off than at age 15	0.1356	0.0749		0.1773	0.1314		0.1390	0.0910	
Expect to be the same 2 years hence	0.5978	0.0235	***	0.6433	0.0303	***	0.5320	0.0371	***
Expect to be better off 2 years hence	0.9827	0.0336	***	1.0596	0.0513	***	0.8857	0.0470	***
Perceived rank in village-middle	0.6774	0.0200	***	0.6935	0.0281	***	0.6853	0.0284	***
Perceived rank in village/suburb – richest	0.0718	0.0206	**	0.1619	0.0447	***	0.2869	0.0420	***
Cons	6.0539	0.1082	***	6.1408	0.2891	***	6.1303	0.1469	***
Number of observations	63,911			31,183			32,728		
R-squared	0.38			0.31			0.37		

Note: *, ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 6. Fixed Effect Estimates of the Determinants of SWB in South Africa:
Dynamic Model

	Full sample			Rural sample			Urban sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Rural	0.116	0.0359	***						
<i>Individual variables</i>									
age	-0.0207	0.0045	***	-0.0171	0.0061	**	-0.0317	0.0068	***
age2	0.0003	0.0001	***	0.0002	0.0001	***	0.0004	0.0001	***
Education	0.0013	0.002		-0.002	0.0026		0.0073	0.0033	*
African	-0.3415	0.1314	*	-0.6707	0.3857		-0.2108	0.1399	
Coloured	-0.1819	0.0846	*	-0.3139	0.2554		-0.0731	0.0912	
Asian/Indian	-0.2563	0.2024		-0.3726	0.4619		-0.1197	0.2317	

Note: *, ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 6. Fixed Effect Estimates of the Determinants of SWB in South Africa:
Dynamic Model (con't)

	Full sample			Rural sample			Urban sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
<i>culture(language)</i>									
<i>IsiNdebele</i>	-0.2068	0.1746		0.5739	0.4806		-0.3806	0.2040	
<i>IsiXhosa</i>	-0.2617	0.1382		0.1838	0.4495		-0.1217	0.1465	
<i>IsiZulu</i>	-0.3118	0.1378	*	0.2899	0.4488		-0.2903	0.1463	*
<i>Sepedi</i>	-0.177	0.1418		0.5121	0.4505		-0.3392	0.1581	*
<i>Sesotho</i>	-0.1431	0.1414		0.4037	0.4617		-0.1242	0.1484	
<i>Setswana</i>	0.051	0.1404		0.795	0.4513		-0.0725	0.1496	
<i>SiSwati</i>	-0.9991	0.1583	***	-0.3063	0.4562		-1.3571	0.226	***
<i>Tshivenda</i>	-0.1077	0.1685		0.4979	0.4618		-0.1419	0.2484	
<i>IsiTsonga</i>	-0.7826	0.1593	***	-0.153	0.4596		-0.7676	0.1994	***
<i>Afrikaans</i>	0.2381	0.1001	*	0.58	0.3759		0.2372	0.1038	*
Living with partner	-0.1695	0.052	***	-0.1416	0.0785		-0.1766	0.0694	*
Widower	-0.0978	0.0458	*	-0.1809	0.0605	***	0.025	0.0701	
Divorced	-0.1201	0.0738		-0.0831	0.1303		-0.1414	0.0905	
Never Married	-0.1447	0.0339	***	-0.1092	0.0499	*	-0.1914	0.0463	***
Very Good	-0.1506	0.0317	***	-0.2833	0.0467	***	-0.0261	0.043	
Good	-0.2046	0.0328	***	-0.2922	0.0481	***	-0.1278	0.0449	*
Fair	-0.3653	0.0458	***	-0.3981	0.0663	***	-0.3475	0.0635	***
Poor	-0.3368	0.0773	***	-0.4937	0.1095	***	-0.1968	0.1089	
Gender	0.0325	0.0258		0.0547	0.0382		0.0164	0.0351	
Employment	0.2113	0.0266	***	0.2077	0.0397	***	0.2238	0.0365	***
HH-size	0.0125	0.0036	***	0.0081	0.0045		0.0197	0.0061	***
<i>Household variables</i>									
Chemical toilet	-0.5661	0.0659	***	-0.65	0.0915	***	-0.3339	0.1117	***
Pit latrine with ventilation pipe	-0.0235	0.0441		-0.0614	0.0678		-0.0903	0.0794	
Pit latrine without ventilation pipe	-0.1654	0.0417	***	-0.2395	0.0651	***	-0.1038	0.0741	
Bucket toilet	0.0004	0.0758		-0.0874	0.1051		0.0698	0.1217	
None	-0.3133	0.0732	***	-0.3415	0.0956	***	-0.3106	0.1404	*
other	0.0727	0.2274		0.1654	0.2937		-0.0499	0.3485	
<i>Social capital variables</i>									
Christian	0.2599	0.0448	***	0.2769	0.0595	***	0.2224	0.0678	***
Jewish	0.0808	0.2044		0.1362	0.3215		0.043	0.2652	
Muslim	0.3203	0.1886		-1.3553	0.9363		0.3337	0.1917	
Hindu	0.406	0.2347		0.872	0.3552	***	0.2457	0.3144	
African traditional spiritual beliefs	0.2357	0.0588	***	0.2815	0.0742	***	0.1379	0.0978	
other	0.0462	0.1866		-0.2052	0.2181		0.4416	0.3185	

Note: *, ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 6. Fixed Effect Estimates of the Determinants of SWB in South Africa:
Dynamic Model (con't)

	Full sample			Rural sample			Urban sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Crime	-0.0116	0.0242		0.0281	0.0354		-0.0622	0.0333	
Trust	-0.0257	0.0259		-0.0521	0.0375		0.0058	0.036	
<i>Income variables</i>									
Ln Per capita household income	0.0118	0.0026	***	0.0182	0.0039	***	0.007	0.0034	*
Perceived to be the same as at age 15	0.0932	0.0279		-0.0014	0.0418		0.1652	0.0373	***
Perceived to be better off than at age 15	0.1635	0.0956	***	0.2061	0.1639		0.1631	0.1169	
Expect to be the same 2 years hence	0.5266	0.0323	***	0.5801	0.0423	***	0.4502	0.0502	***
Expect to be better off 2 years hence	0.7843	0.0452	***	0.8232	0.0722	***	0.7024	0.0617	***
Perceived rank in village-middle	0.4789	0.0273	***	0.4953	0.0392	***	0.4842	0.0382	***
Perceived rank in village/suburb – richest	0.142	0.0401	***	0.3117	0.0601	***	0.0101	0.0546	
LS-1	0.3388	0.0063	***	0.3064	0.0093	***	0.3634	0.0085	***
Cons	3.5362	0.1687	***	3.6112	0.4027	***	3.3958	0.2205	***
Number of observations	30823			14692			16,131		
R-squared	0.23			0.20			0.25		

Note: *, ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

4.2. Robustness Checks

We carried out a robustness check of the estimates obtained from both the static model and the dynamic model, by re-estimating them using a different set of variables capturing individual's emotional state in the NIDS data. Following other scholars in this field, we examined the effects of four variables: whether the individual felt being depressed, lonely, happy and hope a week before the interview. The results are reported in Tables 7 and 8. The estimated coefficients are statistically significant with the expected sign across sub-samples. Individuals who reported their emotional state as being happy and hopeful, were statistically significant in both rural, urban and full samples, and were associated with higher levels of life satisfaction. On the other hand, reporting emotional state as being depressed and lonely, were statistically significant in both rural, urban and full samples, but were associated with lower levels of life satisfaction (Table 7). The estimated coefficients of income and perceived relative ranking are qualitatively similar (remain robust) to those obtained from the static and dynamic models, reported in Tables 6 and 7.

Table 7. Sensitivity Tests, Emotional Health Felt Lonely, Felt Depressed, Felt Happy, Felt Hope: Static Model

	Full Sample			Rural Sample			Urban Sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Felt Lonely									
Ln Per capita household income	-0.2018	0.0119	***	-0.1700	0.0169	***	-0.2327	0.0167	***
Perceived to be the same as at age 15	0.0292	0.0026	***	0.0365	0.0038	***	0.0220	0.0035	***
Perceived to be better off than at age 15	0.1185	0.0209	***	0.0204	0.0309	*	0.1971	0.0284	***
Expect to be the same 2 years hence	0.1439	0.0747	*	0.1903	0.1311	***	0.1472	0.0907	***
Expect to be better off 2 years hence	0.5797	0.0235	***	0.6307	0.0303	***	0.5076	0.0371	***
Perceived rank in village-middle	0.9695	0.0336	***	1.0529	0.0512	***	0.8664	0.0468	***
Perceived rank in village/suburb – richest	0.6575	0.0200	***	0.6723	0.0281	***	0.6688	0.0284	***
Cons	0.0885	0.0305	***	-0.1700	0.0447	***	0.3107	0.0420	***
	6.3085	0.1086	***	6.3540	0.2908	***	6.4312	0.1479	***
Felt depressed									
Ln Per capita household income	0.0112	-0.2259	***	-0.1869	0.0163	***	-0.2571	0.0156	***
Perceived to be the same as at age 15	0.0303	0.0026	***	0.0366	0.0038	***	0.0243	0.0035	***
Perceived to be better off than at age 15	0.1166	0.0209	***	0.0218	0.0309	***	0.1921	0.0284	***
Expect to be the same 2 years hence	0.1347	0.0745	***	0.1889	0.1303	***	0.1315	0.0906	***
Expect to be better off 2 years hence	0.5769	0.0235	***	0.6273	0.0303	***	0.5069	0.0370	***
Perceived rank in village-middle	0.9602	0.0335	***	1.0412	0.0512	***	0.8593	0.0468	***
Perceived rank in village/suburb – richest	0.6487	0.0199	***	0.6666	0.0281	***	0.6576	0.0284	***
Cons	0.0782	0.0305	*	0.1074	0.0448	***	0.2952	0.0419	***
	6.3309	0.1084	***	6.3555	0.2893	***	6.4680	0.1477	***

Note: *, **, and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 7. Sensitivity Tests, Emotional Health Felt Lonely, Felt Depressed, Felt Happy, Felt Hope: Static Model (con't)

	Full Sample			Rural Sample			Urban Sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Felt happy									
Ln Per capita household income	0.1525	0.0266	***	0.2939	0.0120	***	0.1986	0.0117	***
Perceived to be the same as at age 15	0.0292	0.0026	***	0.0327	0.0038	***	0.0250	0.0035	***
Perceived to be better off than at age 15	0.1102	0.0208	***	0.0214	0.0307		0.1815	0.0284	***
Expect to be the same 2 years hence	0.1375	0.0745		0.1965	0.1295		0.1335	0.0906	
Expect to be better off 2 years hence	0.5698	0.0233	***	0.6108	0.0300	***	0.5108	0.0368	***
Perceived rank in village-middle	0.9067	0.0335	***	0.9545	0.0510	***	0.8312	0.0469	***
Perceived rank in village/suburb – richest	0.6866	0.0198	***	0.7074	0.0278	***	0.6913	0.0283	***
Cons	0.1049	0.0304	***	0.1421	0.0445	***	0.3146	0.0419	***
	5.2744	0.1111	***	5.1664	0.2943	***	5.5132	0.1510	***
Felt hope									
Ln Per capita household income	0.2088	0.0077	***	0.2498	0.0111	***	0.1709	0.0106	***
Perceived to be the same as at age 15	0.0263	0.0025	***	0.0302	0.0038	***	0.0222	0.0035	***
Perceived to be better off than at age 15	0.1180	0.0208	***	0.0140	0.0307		0.1979	0.0284	***
Expect to be the same 2 years hence	0.1375	0.0750		0.1282	0.1315		0.1564	0.0910	
Expect to be better off 2 years hence	0.5734	0.0233	***	0.6127	0.0301	***	0.5152	0.0368	***
Perceived rank in village-middle	0.9254	0.0335	***	0.9973	0.0510	***	0.8377	0.0468	***
Perceived rank in village/suburb – richest	0.6985	0.0198	***	0.7234	0.0279	***	0.6995	0.0283	***
Cons	0.1307	0.0302	***	0.01058	0.0439	*	0.3319	0.0418	***
	5.4336	0.1096	***	5.3681	0.2913	***	5.6409	0.1492	***

Note: *, **, and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 8. Sensitivity Tests, Emotional Health Felt Lonely, Felt Depressed, Felt Happy, Felt Hope: Dynamic Model

	Full Sample			Rural Sample			Urban Sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Felt Lonely									
Ln Per capita household income	-0.1826	0.0163	***	-0.1616	0.0239	***	-0.20337	0.0222	***
Perceived to be the same as at age 15	0.0105	0.0026	***	0.0179	0.0039	***	0.0047	0.0034	*
Perceived to be better off than at age 15	0.1010	0.0278	***	0.0031	0.0417		0.176	0.0372	***
Expect to be the same 2 years hence	0.1729	0.0956		0.2271	0.1629		0.1684	0.1171	
Expect to be better off 2 years hence	0.5080	0.0323	***	0.5666	0.0423	***	0.4268	0.0502	***
Perceived rank in village-middle	0.7700	0.0452	***	0.8109	0.0722	***	0.6863	0.0616	***
Perceived rank in village/suburb – richest	0.4614	0.0273	***	0.4751	0.0393	***	0.4712	0.0381	***
L1	0.1353	0.0401	***	0.2161	0.0600	***	0.0009	0.0545	***
Cons	0.3379	0.0063	***	0.3059	0.0093	***	0.3621	0.0085	***
	3.7770	0.1694	***	3.8392	0.4030	***	3.6632	0.2214	***
Felt depressed									
Ln Per capita household income	-0.1928	0.0152	***	-0.1936	0.0225	***	-0.1867	0.0207	***
Perceived to be the same as at age 15	0.0117	0.0026	***	0.0181	0.0039	***	0.0068	0.0034	*
Perceived to be better off than at age 15	0.1020	0.0278	***	0.0087	0.0417		0.1732	0.0372	***
Expect to be the same 2 years hence	0.1568	0.0957	***	0.2201	0.1631		0.1497	0.1172	
Expect to be better off 2 years hence	0.5061	0.0323	***	0.5607	0.0423	***	0.4299	0.0502	***
Perceived rank in village-middle	0.7606	0.0452	***	0.7952	0.0721	***	0.6820	0.0617	***
Perceived rank in village/suburb – richest	0.4559	0.0273	***	0.4706	0.0392	***	0.4638	0.0381	***
L1	0.1439	0.0401	***	0.2262	0.0599	***	0.01138	0.0545	***
Cons	0.3377	0.0063	***	0.3064	0.0093	***	0.3615	0.0084	***
	3.7912	0.1693	***	3.8289	0.4039	***	3.6813	0.2226	***

Note: *, **, and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

Table 8. Sensitivity Tests, Emotional Health Felt Lonely, Felt Depressed, Felt Happy, Felt Hope: Dynamic Model (con't)

	Full Sample			Rural Sample			Urban Sample		
	Coeff	SE	T-stat	Coeff	SE	T-stat	Coeff	SE	T-stat
Felt happy									
Ln Per capita household income	0.2403	0.0113	***	0.2945	0.0166	***	0.1888	0.0155	***
Perceived to be the same as at age 15	0.0111	0.0026	***	0.0155	0.0039	***	0.0074	0.0034	*
Perceived to be better off than at age 15	0.0874	0.0277	***	-0.0029	0.0415		0.1581	0.0371	***
Expect to be the same 2 years hence	0.1736	0.0951		0.2323	0.1617		0.1645	0.1165	
Expect to be better off 2 years hence	0.4967	0.0321	***	0.5413	0.0419	***	0.4301	0.0499	***
Perceived rank in village-middle	0.7098	0.0452	***	0.7338	0.0720	***	0.6447	0.0617	***
Perceived rank in village/suburb – richest	0.4870	0.0271	***	0.5035	0.0387	***	0.4926	0.0380	***
L.I.	0.282	0.0399	***	0.2960	0.0595	***	0.0119	0.0544	***
Cons	0.3391	0.0062	***	0.3071	0.0092	***	0.3635	0.0084	***
	2.7747	0.1712	***	2.6482	0.4072	***	2.7991	0.2241	***
Felt hope									
Ln Per capita household income	0.2035	0.0105	***	0.2426	0.0155	***	0.1662	0.0143	***
Perceived to be the same as at age 15	0.0081	0.0026	***	0.0125	0.0040	***	0.0047	0.0034	*
Perceived to be better off than at age 15	0.1025	0.0277	***	-0.0027	0.0416		0.1800	0.0371	***
Expect to be the same 2 years hence	0.1625	0.0957		0.1391	0.1642		0.1812	0.1172	
Expect to be better off 2 years hence	0.5042	0.0321	***	0.5546	0.0420	***	0.4331	0.0499	***
Perceived rank in village-middle	0.7278	0.0452	***	0.7770	0.0718	***	0.6485	0.0618	***
Perceived rank in village/suburb – richest	0.4980	0.0272	***	0.5146	0.0389	***	0.5021	0.0381	***
L.I.	0.118	0.0398	**	0.22671	0.0591	***	0.0268	0.0544	***
Cons	0.3401	0.0062	***	0.3090	0.0092	***	0.3639	0.0084	***
	2.9326	0.1694	***	2.8857	0.4073	***	2.9088	0.2217	***

Note: ** and *** define significances of the tested variables at 10%, 5%, and 1%, respectively.

5. CONCLUSION

The objective of this paper is to examine the correlates of subjective wellbeing in South Africa in a general sense as well as provide a breakdown of the rural-urban divide. While the relative income hypothesis has been extensively studied elsewhere, data limitations in the developing world, particularly in Africa has constrained the amount of such studies. In South Africa, some leading scholars have blazed the trail in this line of research—their significant contributions are acknowledged in this paper. However, much work still needs to be done with respect to the dynamics of life satisfaction, but the availability and quality of data, until now, had been a major stumbling block to accomplishing this task. One criticism of previous survey data of SWB is the way the surveys asked respondents to report SWB of the household rather than the individual. This assumes that the SWB of the respondent, most often the household head, is representative of the household's SWB (Bookwalter, Fuller, and Dalenberg, 2006). If this is not true, then the SWB effects reported in previous studies may have suffered from errors in measurement. In the NIDS survey, the respondents were asked to report their individual SWB, not that of the household, thus the data used here corrects for this issue. Moreover, because of said data limitations, previous studies mostly estimated cross-sectional models, which did not account for dynamics - a flaw we address by estimating a dynamic model.

The paper contributes to the literature in two significant ways: first, the paper uses a dynamic dataset consisting of five waves of the NIDS, which previous researchers did not have the luxury of. Most of the previous studies use cross-sectional data, meaning that the estimates of the correlates of SWB are at best static estimates. The rich dynamic dataset used in this paper allows the estimation of dynamic effects, thus overcoming biases in the estimation that plagued prior studies. Secondly, the rural-urban divide that we examine is novel, as most prior studies have only examined the national SWB effects. Of the few South African studies that examine the relative income hypothesis, Bookwalter and Dalenberg (2010), Posel and Casale (2011) and Kingdon and Knight (2007) touched on the rural-urban difference in relative income comparisons, but the main focus of their studies was on the effects of racial and other demographic factors, more so than the rural-urban differences thereof.

The paper examines two kinds of relative income: perceived relative income that is inwardly oriented (comparison to oneself 15 years prior) and perception of how the individual ranks in the village/suburb (geographical or external reference group). The paper finds that not only does own-income have a positive effect, but the two types of relative income also positively affect SWB. Measuring relative income by perceived rank, the result shows that in the full sample the effect is several times larger than the own income effect. People who perceive their ranking to be middle to higher within their village/suburb reported on average, higher SWB than those perceived to be in the lower rank. Accounting for other factors, rural dwellers report a higher SWB than urban

dwellers. Similarly, individuals who perceived their incomes to be the same or better off than 15 years ago reported higher life satisfaction. The other correlates of SWB also prove interesting: age of the individual has a U-shaped relationship with SWB whereby individuals report higher life satisfaction at the early and later stages of life while people going through mid-life exhibit lower satisfaction with their life. Other significant variables that positively affect SWB include health status, race (whites and Indians) and socio-cultural variables (Christian, Jewish, Muslim, African traditional believers, and Hindu).

Finally, the paper conducts a robustness or sensitivity analysis using four emotional health status variables (felt depressed, lonely, happy, or hopeful). These emotional health variables along with the actual and perceived income variables were regressed on life satisfaction to observe any changes in the income coefficient effects. By and large the findings are consistent with the earlier results presented. The income variables continue to be positively associated with life satisfaction, and the magnitudes are largely similar in proportion. Individuals who felt emotionally happy or hopeful were generally more likely to report higher life satisfaction, while those who felt depressed or lonely had lower levels of life satisfaction.

APPENDIX

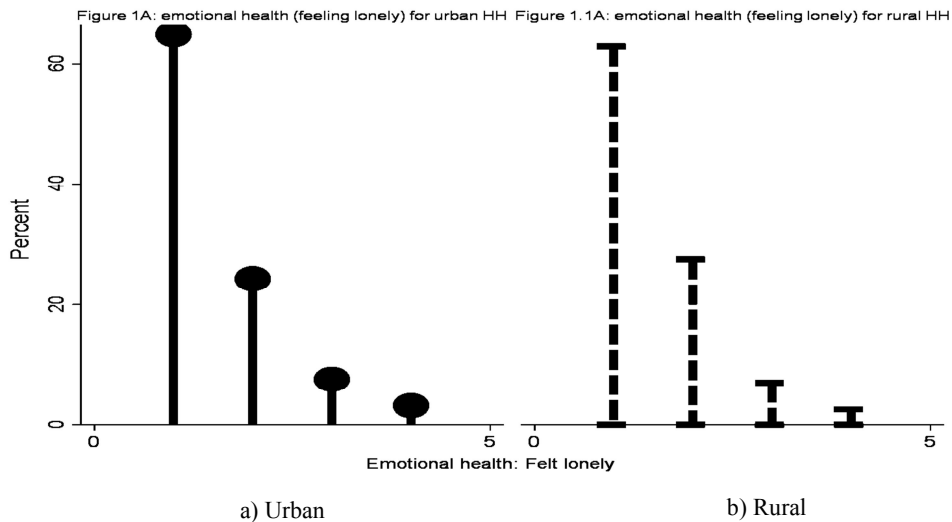


Figure A1. Emotional Health (Feeling Lonely) for Urban and Rural Household

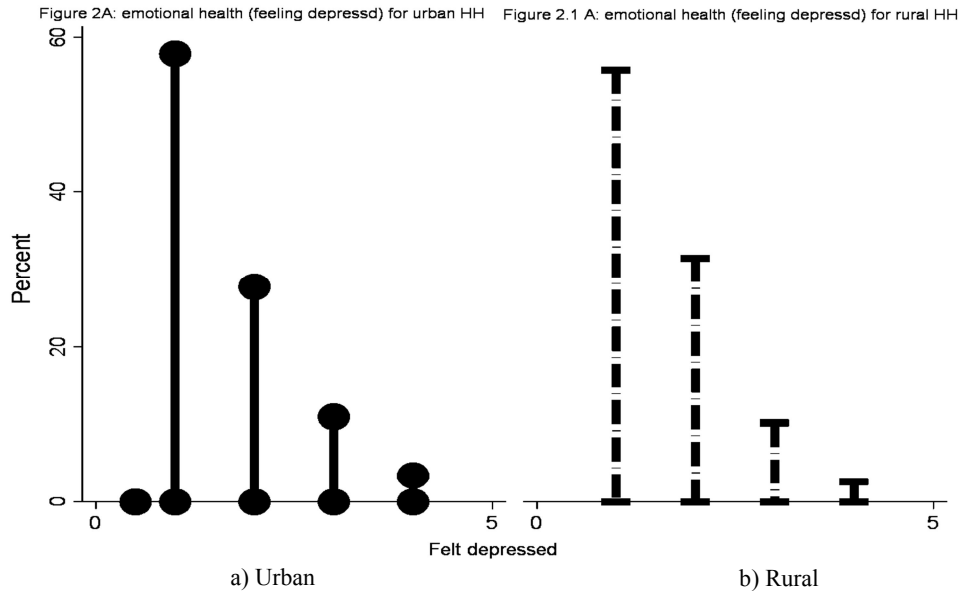


Figure A2. Emotional Health (Feeling Depressed) for Urban and Rural Household

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